Paper No. 34

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Ex parte ERNEST G. SCHUTT, THOMAS E. TARARA, LUIS A. DELLAMARY, ALEXEY KABALNOV and JEFFRY G. WEERS

Appeal No. 2003-0851
Application No. 09/218,213

ON BRIEF

Before WILLIAM F. SMITH, SCHEINER and WINTERS, Administrative Patent Judges.

SCHEINER, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the final rejection of claims 2, 6-12, 39 and 43-55, the only claims remaining in the application.

Claims 2, 7 and 39 are representative of the subject matter on appeal and read as follows:

2. A method for the pulmonary delivery of one or more bioactive agents comprising the steps of:

providing a stabilized respiratory dispersion comprising one or more bioactive agents wherein the respiratory dispersion comprises a plurality of perforated microstructures suspended in and substantially permeated by a fluorochemical continuous phase wherein the volume of suspension medium displaced by the perforated microstucture is less than 70% of the average particle volume of the perforated microstructure;

mobilizing said respiratory dispersion with a nebulizer to provide an aerosolized medicament; and

administering a therapeutically effective amount of said aerosolized medicament to at least a portion of the pulmonary passages of a patient in need thereof.

7. The method of claim 2 wherein said perforated microstructures comprise a surfactant.

39. An inhalation system for the pulmonary administration of a bioactive agent to a patient comprising:

a fluid reservoir;

a stable respiratory dispersion in said fluid reservoir wherein said stabilized dispersion comprises a fluorochemical continuous phase and a plurality of perforated microstructures comprising at least one bioactive agent suspended in and substantially permeated by the continuous phase wherein the volume of suspension medium displaced by the perforated microstructure is less than 70% of the average particle volume of the perforated microstructure; and

a nebulizer operably associated with said fluid reservoir wherein the nebulizer is capable of aerosolizing and discharging the stable respiratory dispersion.

The references relied on by the examiner are:

Hanes et al. (Hanes)	5,855,913	Jan. 5, 1999
Faithfull et al. (Faithfull)	6,041,777	Mar. 28, 2000

Claims 2, 6-12, 39 and 43-55 stand rejected under 35 U.S.C. § 103 as unpatentable over Faithfull and Hanes.

We reverse.

DISCUSSION

Claim 2 is directed to a method of delivering a bioactive agent to the lungs of a patient by aerosolizing a respiratory dispersion with a nebulizer, wherein the respiratory dispersion comprises a bioactive agent and "a plurality of perforated microstructures suspended in and substantially permeated by a fluorochemical continuous phase, wherein the volume of suspension medium displaced by the perforated microstucture is less than 70% of the average particle volume of the perforated microstructure." Claim 39 is directed to a system for pulmonary administration of a bioactive agent, which also requires "a plurality of perforated microstructures suspended in and substantially

permeated by a fluorochemical continuous phase wherein the volume of suspension medium displaced by the perforated microstucture is less than 70% of the average particle volume of the perforated microstructure."

Faithfull describes a method and apparatus for closed-circuit ventilation (i.e., mechanical airflow into a patient's lungs) that isolates the gas flow path from the ventilator apparatus and also "isolate[s] delicate and relatively expensive mechanical ventilators from potentially damaging chemicals often employed in liquid ventilation procedures" (column 6, lines 26-56). This arrangement "prevent[s] the unintentional loss of valuable materials, including fluorochemicals, into the environment" (column 6, lines 19-26). "[A]s the devices . . . are modular, overall configurations and associated conventional devices, particularly . . . nebulizers . . . may be easily substituted or changed depending on therapeutic requirements" (column 6, lines 59-63). The "nebulizer may be used to introduce aerosols, mists, sprays, powders or combinations thereof into the gas flow path thus maintaining compositional equilibria of the ventilating gas or adding respiratory agents . . . [i]n particular, [the] nebulizer may be used to deliver liquid medium, preferably fluorochemicals, to the gas flow path for partial liquid ventilation" (column 16, lines 35-43). Various pharmaceutical agents, including surfactants, "may be provided in combination with a fluorochemical liquid during either partial liquid ventilation or total liquid ventilation" (column 25, line 31 through column 26, line 7).

Hanes describes "aerodynamically light, biodegradable particles, having a tap density less than about 0.4 g/cm^3, which can be used for . . . drug delivery to the respiratory tract via aerosolization" (column 4, lines 44-49). According to the examiner,

the particles "can be in different diameter sizes ranging from about 1-1000 μm, and the mean particle size of at least about 5 μm" and the reference also discloses "particles having mean aerodynamic diameter size greater than approximately 1 μm" (Answer, page 4). Hanes teaches that "particles incorporating a surfactant have improved aerosolization properties" and suitable surfactants include phosphatidylcholines, such as the naturally occurring lung surfactant, L-α-phosphatidylcholine dipalitoyl ("DPPC")" (column 4, lines 56-67). The reference teaches that "[t]he particles incorporating a surfactant and a therapeutic agent may be administered alone or in any appropriate pharmaceutical carrier, such as a liquid, for example saline, or a powder" (column 10, lines 51-54), but Hanes' emphasis is on fabricating the particles "with a rough surface texture to reduce particle agglomeration and improve flowability of the powder" and "enhance aerosolization via dry powder inhaler devices" (column 4, lines 53-59).

According to the examiner, "it would have been prima facie obvious for one of ordinary skill in the art to modify Faithfull's surfactant, using DPPC as a surfactant in view of the teachings of Hanes" and "[t]he reason for this modification is to improve the aerosolization of the particles and to reduce particle agglomeration, [and] thus promote absorption/increase bioavailablity of the drug in the lung" (Answer, page 4).

There are a number of problems with the examiner's rationale, not least of which is that merely substituting DPPC for Faithfull's generic surfactant would not result in a respiratory dispersion comprising perforated microstructures suspended in and permeated by a fluorochemical continuous phase, much less one in which "the volume of suspension medium displaced by the perforated microstructure is less than 70% of the average particle volume of the perforated microstructure," as required by the claims. For that matter, there is no evidence of record which would establish that Hanes'

particles comprise perforated microstructures in which the volume of suspension medium displaced by the perforated microstructure is less than 70% of the average particle volume of the perforated microstructure, so there is no evidence that substituting Hanes' particles, with or without surfactant, for Faithfull's powder would meet the specific limitations of the claims either.

Indeed, the examiner apparently concedes that neither reference describes "perforated microstructures . . . wherein the volume of suspension medium displaced by the perforated microstructure is less than 70% of the average particle volume of the perforated microstructure," arguing instead that "applicant[s have] not provide[d] any data showing the criticality of 'the volume of suspension medium displaced by the perforated microstructure . . . '," and "[a]bsent of unexpected result . . . no criticality is seen in the claimed volume" (Brief, page 6). The flaw in the examiner's position is that it puts the cart before the horse, effectively negating an explicit limitation in the claims based solely on appellants' disclosure, rather than the teachings of the prior art. The criticality of a limitation is immaterial if there is nothing in the prior art to suggest it in the first place.

Finally, with respect to the examiner's stated reason for modifying the references, as we noted above, the reduced particle agglomeration and improved flowability and aerodynamic properties of Hanes' "particles incorporating a surfactant" are associated with "aerosolization via dry powder inhaler devices" (column 4, lines 55-59). The examiner does not identify anything in Hanes which would have led one skilled in the art to expect that the same would be true of particles suspended in liquid, much less a fluorochemical continuous phase.

The initial burden of presenting a prima facie case of obviousness rests on the examiner. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Here, the evidence relied on by the examiner does not establish that all of limitations of the claims on appeal were taught or would have been suggested by the prior art. Accordingly, we reverse the examiner's rejection of claims 2, 6-12, 39 and 43-55 under 35 U.S.C. § 103.

REVERSED

Sherman D. Winters
Administrative Patent Judge

William F. Smith
Administrative Patent Judge

Toni R. Scheiner
Administrative Patent Judge

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